

## Information for Observers

**Scheduling:** Telescopes at TMO are scheduled quarterly. Users may apply for time by filling out the attached **form** and FAXing it to James Young (760 249-5392), the Astronomy Team Lead, at the appropriate time. Observing requests may also be submitted on hardcopy through JPL Lab mail addressed to Mr. Young at 'TMO', or by e-mail to Mr. Young's address on the form. The dates for providing these requests for the next four quarters are listed below. Questions about TMO can also be answered by the Astronomy Science Lead at JPL, Paul Weissman (4-2636, 183-301).

<u>Observing quarter</u>	<u>Send request between</u>
January 1 – March 31, 2008	December 1-17, 2007
April 1 – June 30, 2008	March 1-21, 2008
July 1 – September 30, 2008	June 1-20, 2008
October 1 – December 31, 2008	September 1-19, 2008

Users will be asked to specify the telescope, camera, and filters they wish to use, provide the dates of the proposed observations, and provide a brief scientific justification for their observations. Also, users are asked for the dates of past use of TMO and the current status of that data.

A published schedule (hard copy) will be sent to all scheduled observers, as well as placed on the TMO webpage, <http://tmoa.jpl.nasa.gov>, the week before each scheduled quarter.

**Seeing and Dark Skies:** Seeing at TMO typically averages between 1 and 2 arc-seconds, though it can be much worse on occasion. Sub-arc-second seeing is rare, but occurs from time to time.

The local mountains and desert are fairly dark. Table Mountain was considered as a site for the Palomar 200" telescope but was rejected because of its proximity to the San Andreas Fault. The lights of Los Angeles are visible to the southwest and can interfere with observing in that direction. However the skies over the desert to the east and north, and overhead, are excellent.

**Publishing Results:** We ask that all observers add the following line in the acknowledgement section of their papers when publishing results: "Table Mountain Observatory is supported by internal funds from the JPL Science and Technology Management Council."

**Weather:** Table Mountain experiences the same Mediterranean climate as the Los Angeles basin, with a rainy season from approximately late October until March or April. Because of the altitude, the mountains may be cloudy when the basin is clear. Also, because of the altitude, rain in the basin often becomes snow at TMO. Accumulations can be quite large. The TMF staff will attempt to keep the roads within the site and the access road clear. Local authorities clear the highways. The California Highway Patrol may require visitors to have chains for their car tires in the event of a heavy snowfall.

TMO is located well above the typical marine layer that forms over the L.A. basin in the evening during spring and summer months. On rare occasions fog does come up the valley to the Observatory. An advantage of the marine layer is that it typically reduces the lights from Los Angeles. The Observatory is also well above any smog layers.

Daytime temperatures can range up to the low 90s F. in the summer months, and in to the single digits (Fahrenheit) in the winter nights. Users are advised to bring appropriate clothing for the time of year. The 0.6m dome is air conditioned during daylight hours so that it is appropriately cool when opened at night. The 0.6m control room is air conditioned.

**Coming to TMO:** TMO is located in the Angeles National Forest, about 4 miles west of Wrightwood, CA above Highway 2, the Angeles Crest Highway. There are two routes to get there from Pasadena:



- 1) Take the 210 Foothill freeway east from Pasadena to the 15 freeway and go north up through the Cajon Pass for ~16 miles. Just past the truck scales on the right is the exit for California Highway 138; there is also a McDonalds at this exit. Turn west on 138 and follow it for 8.5 miles until it intersects with California 2, the Angeles Crest Highway. Please note: Highway 138 has one of the highest accident rates in California so please drive carefully and avoid the temptation to pass slower truck traffic on this 2-lane road. Follow Highway 2 for 5 miles to Wrightwood and then 4 miles farther to the Big Pines Ranger Station.
- 2) Take the 210 Foothill freeway west from Pasadena until it meets up with the 5 Golden State freeway going north. Stay right and take the 14 Antelope Valley freeway towards Lancaster/Palmdale. Take the Highway 138 turnoff (6 miles SE of Palmdale), following this desert route east for 30 miles through Littlerock and Pearblossom, and continue to Highway 2, turn right, and then continue through Wrightwood to TMO, as above.
- 3) TMO can also be reached by way of the Angeles Crest Highway, starting from La Canada, but JPL strongly discourages the use of this route because of the very

twisty mountain road. The Angeles Crest Highway is currently closed but is scheduled to be re-opened in the fall of 2008. Regardless, it is not a suggested route for use by JPL employees.

The turnoff for Table Mountain Road is located on the Angeles Crest Highway, just west of the Big Pines Ranger Station, easily recognizable by its stone tower, at a 5-way intersection. Table Mountain Road is the road closest to the Ranger Station on the north side of Highway 2, and goes steeply uphill. Please be careful driving this road as it has many twists and turns. At the top, the driver will encounter a large parking lot, which is part of Mountain High North (see below). Drive along the west side of the parking lot to a locked gate barring a road going further uphill. Drive around the gate on the left and proceed to Table Mountain Facility. Again, please note that this is a narrow and twisty 2-way road, so drive carefully.



TMF is a JPL Remote Site and is a secure location. Before entering the site, visitors must use the telephone located at the entrance gate to call the TMF main desk (x3650) and request admission. Visitor parking is located on the right side of the entrance road, across from building TM-17 and next to the large water tank.

Visitors must show identification and must sign in at the TMF main desk located inside the entrance to building TM-17. JPL ID badges or visitor badges must be worn at all times. The TMF main desk should be notified about visits by foreign nationals well in advance so the appropriate paperwork can be processed prior to the visit. Users must also sign for the key(s) issued to them (dome, dormitory room). Please remember to return all keys and to sign out when leaving the site at the end of your run.

Visitors may leave the site by simply driving their cars to the marked area in front of the entrance gate, which will cause the gate to open automatically. Upon returning, use the telephone at the gate to request re-admission. When entering or leaving please be aware of unauthorized vehicles on the road, so as not to inadvertently allow them entry.

**Training:** Observers at TMO operate both facility instruments and telescopes, and therefore must be trained on this equipment by a member of the TMO staff, prior to use. This can usually be accomplished over the course of one night, and must occur on site. Remote observing capabilities are available but that privilege is only granted to experienced users. An on-call staff member is available throughout the night if an observer encounters problems during their run.

The operating manual for the 0.6-meter telescope and 1K CCD camera is available [here](#). The operating manual for the 0.4-meter telescope is located [here](#).

**Safety:** All visitors are required to view a short video course on TMF safety when they first arrive at the mountain. Observers working alone on any telescope will be asked to wear an “Alert Button” that can signal the TMF security personnel in the event of an emergency. The alert buttons are available at the TMF main desk inside the entrance to building TM-17.

The possession and use of alcoholic beverages or illegal drugs on site is strictly forbidden. Smoking is permitted only outside in specifically designated areas.

The Angeles National Forest is always at risk from fire, particularly in the dry months from approximately March to October/November. Observers are asked to take extra care if they are smokers, or if they park their cars off the pavement – catalytic converters get very hot and can start ground fires.

**Cryogen Safety Training:** Observers using the 1K CCD LN<sub>2</sub>-cooled camera on the 0.6m telescope must be trained to refill the liquid nitrogen dewar. In addition to viewing a short training video and on site PPE (personal protective equipment) training, observers must also have taken the JPL Cryogen Safety course at the Laboratory. Users who have not taken Cryogen Safety cannot observe with the 1K CCD LN<sub>2</sub> camera. All necessary protective equipment for handling LN<sub>2</sub> is available in the 0.6 meter dome and must be used.

**Dormitories and Kitchen:** Dormitory facilities are available at the Table Mountain Facility for a modest daily fee (currently \$23.50/night).



These rooms provide a bed, dresser, mirror, chair, night table, lamp and alarm clock, and (usually) a private bathroom and shower. Linens and towels are provided; additional blankets, towels and pillows are available upon request. There is no daily maid service. Observers should request one of the “astronomer rooms,” which are additionally provided with blackout curtains. Dormitory rooms must be reserved in advance by calling the Table Mountain Facility (760 249-3650) and providing a valid JPL charge number.

When staying in the dormitory, please respect quiet rules at all times. People may be sleeping at any time of the day or night. Also, it is advisable to not keep food or beverages in the room, as they attract bugs. Please try to minimize your use of water.

TMF also provides a full kitchen for use by its staff and visitors to the mountain. Observers may bring their own food and cook in the kitchen, and are responsible for their own clean-up. The 0.6m dome also provides a small refrigerator and microwave oven for use by observers during the night. Food and other supplies may be obtained in Wrightwood. There is a grocery store, gas station/mini-mart, and a variety of places to eat. Observers may find it less expensive to buy gas and groceries before they leave home.







The TMO/TMF dining room next to the kitchen has a satellite television for entertainment in off hours, and an additional system is in the library.



**Locale:** TMO/TMF is located in the Angeles National Forest at an altitude of 7,500 feet. We share the National Forest with many other users. Observers are asked to respect the locale and the natural environment. If you visit Wrightwood, remember that you are representing JPL and TMO, so please act accordingly. Most people in Wrightwood are very friendly and are often interested in the work at TMO/TMF.

TMO/TMF users are not required to pay the Forest Service parking fee if they are driving to TMF or to Wrightwood. However, if you go hiking during the day, please pay the fee at the Big Pines Ranger Station at the base of Table Mountain Road, if you plan on parking along the various roads off of the TMF/TMO site.

Because of the altitude, users will want to be careful to acclimatize during their first few days on the mountain. Wrightwood is at an altitude of 6,000 feet so acclimatization is usually not affected by visits to the town. Also, because the humidity is typically fairly low, users will want to pay special attention to keeping hydrated during their stay, both internally and externally.



**Wildlife:** Wildlife in the local forest includes deer, black bears, mountain lions, and rattle snakes. These animals rarely enter the TMF site, seeking food from the garbage bins around the facility. Users should take care when walking between buildings at night. Use a flashlight and make sure you make noise as you walk. Startled animals are far more dangerous. Do not leave food outside the buildings. Note that feeding wildlife is forbidden by law.

Rattlesnakes are more of a problem during the day when it is warmer. Stay on paved roads and watch where you walk. During evening twilight, rattlesnakes may crawl onto paved asphalt to stay warm. If you encounter a rattlesnake, give it a wide berth and notify the TMF security personnel. Snakes cannot strike farther than their length; please do not attempt to verify this experimentally. Taunting a snake is a sure way to get bitten.



In general, encounters with local wildlife are rare. If you encounter a bear or a lion, don't run, as this triggers their chase instinct. Instead, make yourself appear as large as possible by raising your hands over your head, and slowly walk away from the animal. Do not turn your back on the animal. Get inside a building as quickly as possible and report the encounter to the TMF main desk (x3650). This is another reason to always wear a personal Alert Button.

**Mountain High:** TMO/TMF share Table Mountain and the adjoining valley with Mountain High, a local ski area operator. Groomed slopes across the valley are very popular during the winter months, particularly on weekends and holidays. Traffic congestion on the Angeles Crest Highway can be very severe. Mountain High operations include night skiing and the slopes are brightly lit. This raises sky brightness and reduces the TMO limiting magnitude by about one magnitude. However, many observers operate quite successfully during ski season.

When observing, make certain that the TMO staff notifies Mountain High by 3:00 PM each day of your observing run. Mountain High will be notified to turn off their lights at 10:30 PM. Ski grooming machines will be operating on the slopes and their headlights may occasionally strike the domes. This is an unavoidable consequence of sharing the National Forest with other users. J. Young uses a 'light code' to indicate what is needed each night:

Light Code 1	ALL lights off at 10:30 PM, including security lighting (used only once in 1980).
Light Code 2	Normal request: security lights remain on
Light Code 3	Some lights remain on under Mountain High visitor/staff emergencies (used very rarely)
Light Code 4	No lights off: normal in bad weather/full moon

Once the 'light code' has been called in, changing the request from 'lights on' (#4) to #2 cannot be made. This is because Mountain High staff snow groomers have already set in place their night's staff members, work areas, and equipment. If an observer starts out with #2, and he or she ends their observing early due to equipment failure or weather shut-down requirements, TMO/TMF can (and does) call Mountain High to inform them their lights can be turned back on. This is a courtesy, and is strongly recommended to maintain the good rapport between Mountain High and TMO operations.

Mountain High also operates a snow play area on Table Mountain, which can be quite crowded on weekends and holidays during the winter. To get to TMF you must transit the Mountain High North parking lot, so please drive slowly and carefully. If Mountain High users have blocked the TMF access road, notify the TMF staff immediately.